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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,988	03/16/2001	Koichi Masukura	204905US2SRD	5115
22850	7590	04/21/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			HARRISON, CHANTE E	
			ART UNIT	PAPER NUMBER
			2675	

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/808,988

Applicant(s)

MASUKURA ET AL.

Examiner

Chante Harrison

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-20 and 22-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-20 and 22-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This action is responsive to communications: RCE filed 1/28/05 and Amendment filed on 12/10/04.

2. Claims 1-14, 16-20 and 22-26 are pending in the case. Claims 1, 12, 16, 20, 22 and 26 are independent claims. Claims 1-4, 6-7, 9-10, 12-14, 16-20, 22-26 have been amended.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12-14 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Jin-Hun Kim, U.S. Patent 5,883,997, 3/1999.

As per independent claim 12, Kim discloses generating a polygon approximating a contour of the object region in several frames, the polygon having vertexes (col. 3, ll. 23-30); associating each of the vertexes in each of the several frames with each of the same vertexes in an adjacent frame (col. 4, ll. 6-15); obtaining trajectories, each of the trajectories linking the same vertexes through the several frames (col. 4, ll. 6-15);

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estimating positions of vertexes of a polygon in a next frame based on trajectories, the next frame following a last frame of the frames for which the trajectories are obtained (col. 5, ll. 46-54); moving the position-estimated vertex in accordance with a contour of the object region in the next frame (col. 3, ll. 44-49); updating the trajectories by associating each of the moved vertexes with trajectories linking the vertexes which are the same as the moved vertexes (col. 5, ll. 35-55); and generating the object region data based on the updated trajectories (col. 6, ll. 48-60).

As per dependent claim 13, Kim discloses the trajectories are respectively approximated by predetermined functions, and the object region data is generated by using the functions (col. 3, ll. 30-38).

As per dependent claim 14, Kim discloses the object region data includes position data of the vertexes (col. 3, ll. 41-45) of each of the frames and association data indicting correspondence of the vertexes between the frames (col. 4, ll. 6-15).

As per independent claim 20, Kim discloses an approximation unit (Fig. 1 "201"), an association unit (Fig. 1 "220"); a trajectory obtaining unit (Fig. 1 "280"); an estimation unit (Fig. 1 "250"); a moving unit (Fig. 1 "280"); an updating unit (Fig. 1 "250"); and an object region data generation unit (Fig. 1 "260") for implementing the method of claim 12. Therefore the rationale applied in the rejection of claim 12 applies herein.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin-Hun Kim, U.S. Patent 5,883,997, 3/1999.

As per independent claim 1, Kim discloses generating a polygon approximating a contour of the object region in each of the frames, the polygon having vertexes (col. 3, ll. 23-30); associating each of the vertexes in each of the frames with each of the same vertexes in an adjacent frame (i.e. mapping the vertices) (col. 4, ll. 6-15); obtaining trajectories, each of the trajectories linking the same vertexes through the frames for each video frame sequence of digital data (col. 4, ll. 6-15); and generating the object region data based on the trajectories (col. 6, ll. 48-60).

Kim fails to expressly disclose linking the same vertexes through the frames based on the time-series variation of the frame.

It would have been obvious to one of ordinary skill in the art to have Kim's linked vertexes of frames include linking based on the time-series variation of the frames because frames are a timed sequence of digital data that together represent video; and

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linking the vertexes of frames based on time enables the determination of the change in motion between successive frames.

As per dependent claims 2 and 17, Kim discloses the vertexes in each of the frames are associated each of the same vertexes in the adjacent frame such that a distance between each of the vertexes in each of the frames and each of the same vertexes in the adjacent frame is minimum (col. 3, ll. 60-66).

As per dependent claim 3, Kim discloses the distance between each of the vertexes in each of the frames and each of the same vertexes in the adjacent frame is calculated after a center of gravity of the polygon in each of the frames coincides with a center of gravity of the polygon in the adjacent frame (col. 3, ll. 32-38).

As per dependent claims 4, 7 and 10, Kim discloses the trajectories are respectively approximated by predetermined functions, and the object region data is generated by using the functions (col. 3, ll. 30-38).

As per dependent claims 5, 8 and 11, Kim discloses the object region data includes position data of the vertexes (col. 3, ll. 41-45) of each of the frames and association data indicting correspondence of the vertexes between the frames (col. 4, ll. 6-15).

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As per dependent claims 6 and 18, Kim discloses the associating each of the vertexes with each of the same vertexes comprises estimating vertexes in the adjacent frame based on the trajectories (i.e. determining a predicted vertex) (col. 3, ll. 60-63), and selecting the vertexes in the adjacent frame, that are closest to the estimated vertexes (col. 3, ll. 64-66).

As per dependent claims 9 and 19, discloses the associating each of the vertexes with each of vertexes comprises obtaining a characteristic quantity (i.e. distance) of the vertexes of each of the frames (col. 3, ll. 60-67) and associating the vertex in each of the frames and the same vertex in the adjacent frame which have the closest characteristic quantity (col. 4, ll. 10-15).

As per independent claim 16, Kim discloses an approximation unit (Fig. 1 "201"), an association unit (Fig. 1 "220"); a trajectory obtaining unit (Fig. 1 "280") and an object region data generation unit (Fig. 1 "260") for implementing the method of claim 1.

Therefore the rationale applied in the rejection of claim 1 applies herein.

3. Claims 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin-Hun Kim, U.S. Patent 5,883,997, 3/1999, and further in view of Aggelos Katsaggelos et al., "MPEG-4 and Rate-Distortion-Based-Shape Coding Techniques", Proceedings of the IEEE, Vol. 86, No. 6, June 1998.

As per independent claim 22, Kim discloses generate a polygon approximating a contour of the object region in each of the frames, the polygon having vertexes (col. 3, ll. 23-30); associate each of the vertexes in each of the frames with the same vertexes in an adjacent frame of each of the frames (i.e. mapping the vertices) (col. 4, ll. 6-15); obtain trajectories, each of the trajectories linking the same vertexes through the frames for each video frame sequence of digital data (col. 4, ll. 6-15); and generate the object region data based on the trajectories (col. 6, ll. 48-60).

Kim fails to expressly disclose linking the same vertexes through the frames based on the time-series variation of the frame. Kim also fails to disclose computer readable program code means.

Katsaggelos discloses an application for an coding algorithm like object based analysis synthesis coding which uses object shape, texture and motion to describe moving video objects (pp. 1, col. 2, Para 1).

It would have been obvious to one of ordinary skill in the art to have Kim's linked vertexes of frames include linking based on the time-series variation of the frames because frames are a timed sequence of digital data that together represent video; and



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linking the vertexes of frames based on time enables the determination of the change in motion between successive frames. Additionally, it would have been obvious to one of ordinary skill in the art to have Kim's object region data generation include Katsaggelos' application as a computer readable program code means because dynamic programming improves the use of a prediction method that uses shape coding of a polygon approximation along with motion modeling to describe object region deformation.

As per dependent claim 23, Kim discloses the vertexes in each of the frames are associated each of the same vertexes in the adjacent frame such that a distance between each of the vertexes in each of the frames and each of the same vertexes in the adjacent frame is minimum (col. 3, ll. 60-66).

As per dependent claim 24, Kim discloses the associating each of the vertexes with each of the same vertexes comprises estimating vertexes in the adjacent frame based on the trajectories (i.e. determining a predicted vertex) (col. 3, ll. 60-63), and selecting the vertexes in the adjacent frame, that are closest to the estimated vertexes (col. 3, ll. 64-66).

As per dependent claim 25, discloses the associating each of the vertexes with each of vertexes comprises obtaining a characteristic quantity (i.e. distance) of the vertexes of each of the frames (col. 3, ll. 60-67) and associating the vertex in each of the frames

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and the same vertex in the adjacent frame which have the closest characteristic quantity (col. 4, ll. 10-15).

As per independent claim 26, Kim discloses generating a polygon approximating a contour of the object region in several frames, the polygon having vertexes (col. 3, ll. 23-30); associating each of the vertexes in each of the several frames with each of the same vertexes in an adjacent frame (col. 4, ll. 6-15); obtaining trajectories, each of the trajectories linking the same vertexes through the several frames (col. 4, ll. 6-15); estimating positions of vertexes of a polygon in a next frame based on trajectories, the next frame following a last frame of the frames for which the trajectories are obtained (col. 5, ll. 46-54); moving the position-estimated vertex in accordance with a contour of the object region in the next frame (col. 3, ll. 44-49); updating the trajectories by associating each of the moved vertexes with trajectories linking the vertexes which are the same as the moved vertexes (col. 5, ll. 35-55); and generating the object region data based on the updated trajectories (col. 6, ll. 48-60).

Kim fails to disclose a computer readable program code means.

Katsaggelos discloses an application for an coding algorithm like object based analysis synthesis coding which uses object shape, texture and motion to describe moving video objects (pp. 1, col. 2, Para 1).

It would have been obvious to one of ordinary skill in the art to have Kim's object region data generation include Katsaggelos' application as a computer readable program code means because dynamic programming improves the use of a prediction

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method that uses shape coding of a polygon approximation along with motion modeling to describe object region deformation.

***Response to Arguments***

4. Applicant's arguments, see pp. 13, Par 2 , filed 12/10/04, with respect to the rejection(s) of claim(s) 1 and 12 under 35 USC 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Jin-Hun Kim, U.S. Patent 5,883,997, 3/1999.

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### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chante Harrison whose telephone number is 571-272-7659. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chante Harrison  
Examiner  
Art Unit 2672

ceh  
April 14, 2005



**AMIR A. AWAD**  
**PRIMARY EXAMINER**